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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,704	06/27/2003	John Thomas Pawlak	2003P07963 US	9676

7590 03/08/2006
Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, NJ 08830

EXAMINER

BAKER, DAVID S

ART UNIT	PAPER NUMBER
2884	

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/608,704	Applicant(s) PAWLAK ET AL.	
	Examiner David S. Baker	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06/27/2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10, 25 and 26 is/are allowed.
- 6) ☒ Claim(s) 11-24 and 27-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06/27/2003, 01/27/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed on 01/27/2006 has been accepted and entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stephan (US Patent #5,677,535 A) in view of Lonn (US Patent #5,777,332 A).

Regarding claim 11, Stephan discloses a method for orbital detection comprising moving relative to a patient a first detector in a first direction toward a patient to a position adjacent to a patient based on an output of a sensor that senses patient proximity to the first detector (figure 2, column 3 lines 15-49), moving relative to a patient a second detector in a second direction toward a patient to a position adjacent to a patient based on

an output of a sensor that senses patient proximity to the second detector (figure 2, column 3 lines 15-49), and determining an orbital path of the first and second detectors around the patient based upon the positions adjacent to the patient determined by the first and second sensing methods (figure 2, column 1 lines 57-64, column 2 lines 65-67, column 3 lines 1-49). Stephan does not disclose expressly a method for orbit calculation comprising calculating an orbital path of the first and second detectors around the patient based upon the positions adjacent to the patient or using a calculated orbital path to move first and second detectors about a patient to obtain image data of the patient. Lonn discloses a method for orbit calculation comprising calculating an orbital path of a detector around a patient based upon the position adjacent to the patient and using a calculated orbital path to move a detector about a patient to obtain image data of the patient (figures 1 and 2, column 4 lines 32-60, column 6 lines 60-67, column 7 lines 1-67, column 8 lines 1-67, column 9 lines 1-63). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the methods of sensing relating to the sensors taught by Stephan along with the orbit calculation methods taught by Lonn. The suggestion/motivation for doing so would have been that by using the sensors of Stephan, the process could reduce scanning time.

Regarding claim 12, which is dependant upon the method of claim 11, Stephan discloses that the method of claim 11 may be performed automatically (column 1 lines 57-64).

Art Unit: 2878

4. Claims 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacs (US Patent #4,503,331 A) in view of Ohike (US Patent #5,691,538 A) and Lonn (US Patent #5,777,332 A).

Regarding claims 13-19, Kovacs discloses (figures 1-4, column 1 lines 5-10, column 2 lines 55-68, column 3 lines 1-68, column 4 lines 1-20) an orbital-detector apparatus as part of a nuclear medicine imaging apparatus, comprising a first detector element (50) to detect inside a patient, a first sensor element (not shown) to sense patient proximity to said first detector element (50), a first carrier mechanism (10, 20) configured to move said first detector element (50) in a first direction from a position distal to the patient to a first position adjacent to said patient based on an output of said first sensor element (not shown), that the orbital path is a non-circular orbit, and that the apparatus varies a radius of said orbital path to reduce a distance of the detector element (50) from the patient. Kovacs does not disclose expressly a second detector element to detect inside a patient, a second sensor element to sense patient proximity to said second detector element, a second carrier mechanism configured to move said second detector element in a second direction from a position distal to the patient to a second position adjacent to said patient based on an output of said second sensor element, a control unit configured to calculate an orbital path of at least one of said first detector element and second detector element around the patient based upon said first and second positions, that the detector is a parallel-hole collimated detector, wherein the front surfaces of a first detector element and a second detector element are at an angle of less than about 180 degrees from one another, or wherein the front surfaces of a first detector element and a second detector

element are at an angle of about 90 degrees from one another. Ohike discloses (figures 1 and 2, column 1 lines 8-20, column 2 lines 58-67, column 3 lines 1-54, column 7 lines 25-33, column 8 line 9-39, column 9 lines 17-60, column 10 lines 1-2) a dual detector system (3a, 3b) in which there is a second detector element (3b) to detect inside the patient (2), a second sensor element (not shown) to sense patient (2) proximity to said second detector element, a second carrier mechanism (8, 9b) configured to move second detector element (3b) in a second direction from a position distal to the patient (2) to a position proximate to said patient (2) based on an output of said second sensor element, that the detectors (3a, 3b) are nuclear medicine imaging detectors, wherein the front surfaces (not shown) of the first detector element (3a) and the second detector element (3b) are at an angle of less than about 180 degrees from one another; at an angle of about 90 degrees from one another. Lonn discloses (figures 1 and 2, column 2 lines 30-46, column 4 lines 32-60, column 6 lines 60-67, column 7 lines 1-67, column 8 lines 1-67, column 9 lines 1-63) a control unit configured to calculate an orbital path of a detector element around the patient based upon said first and second positions and an interchangeable collimator that may accommodate a parallel-hole collimator. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add a second detector with a sensor to the orbital-detector apparatus put forth by Kovacs and then utilize the methods of Ohike and Lonn for its use to calculate the orbital path of the non-circular orbital detectors. The suggestion/motivation for doing so would be the ability to decrease detection times while producing higher resolution quality images due to the reduced radius between detectors and patient.

Art Unit: 2878

5. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacs (US Patent #4,503,331 A), Ohike (US Patent #5,691,538 A), and Lonn (US Patent #5,777,332 A) as applied to claim 19 above, and further in view of Hug (US Patent #5,444,252 A).

Regarding claim 20-22, Kovacs, Ohike, and Lonn do not disclose expressly wherein the first direction is generally downward, wherein the first direction is generally vertical, or wherein the second direction is generally parallel to a front of the first detector element. Hug discloses (figures 2a and 10a, column 4 lines 32-36) wherein the first direction is generally downward (2), wherein the first direction is generally vertical (2), and wherein the second direction (2) is generally parallel to a front of the first detector element (4). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to position the plates in such a 90 degree position with the apparatus outlined in the parent claims. The suggestion/motivation for doing so would have been to improve the image quality.

6. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacs (US Patent #4,503,331 A), Ohike (US Patent #5,691,538 A), and Lonn (US Patent #5,777,332 A) as applied to claim 13 above, and further in view of Stephan (US Patent #5,677,535 A).

Regarding claims 23 and 24, Kovacs, Ohike, and Lonn do not disclose expressly a first sensor or second sensor emitting a light beam that is broken by proximity to a patient. Stephan discloses (figure 2, column 3 lines 15-49) a first sensor (7) emitting a light beam (13, 14, 15) that is broken by proximity to a patient (10). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a parallel light beam sensor to measure patient to detector distances. The

suggestion/motivation for doing so would have been the fact that this system would provide a contactless and automatic means for allowing the detector to be as close as possible to the patient during scanning.

7. Claims 27, 28, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lonn (US Patent #5,777,332 A) in view of Stephan (US Patent #5,677,535 A).

Regarding claims 27, 28, and 30, Lonn discloses (figures 1 and 2, column 4 lines 32-60, column 6 lines 60-67, column 7 lines 1-67, column 8 lines 1-67, column 9 lines 1-63) determining a plurality of orbital locations around a perimeter of a patient before performing image data acquisition (column 6 lines 60-67, column 7 lines 1-6), automatically predetermining a non-circular orbit around a patient based, at least in part, upon the plurality of locations (column 7 lines 12-24), moving at least one nuclear medicine detector along the predetermined non-circular orbit around said patient for acquisition of nuclear medicine data (column 20 lines 36-37), wherein at least one location is based on at least one location against which the patient is supported (column 6 lines 60-67, column 7 lines 1-6). Stephan discloses (figure 5c, column 2 lines 45-67 column 3 lines 1-67, column 4 lines 1-67, column 5 lines 1-67, column 6 lines 1-4) automatically determining of orbit locations, determining the locations by sensing a proximity to a patient of at least two detectors which are arranged in a V-configurations (figure 5c, column 5 lines 21-39). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to follow the method taught by Lonn while incorporating the sensors of Stephan's. The suggestion/motivation for doing so

would have been that by using Stephan's sensor on the detector of Lonn, the process of determining the non-circular orbit could be automated and hence, save time.

8. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lonn (US Patent #5,777,332 A) in view of Stephan (US Patent #5,677,535 A) as applied to claim 28 above, and further in view of Kovacs (US Patent #4,503,331 A).

Regarding claim 29, Lonn and Stephan do not disclose express wherein the automatically determining method includes calculating a non-circular orbit using a controller. Kovacs discloses (figure 5, column 4 lines 3-68, column 5 lines 1-33) a controller for automatically calculating the non-circular orbit. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a controller to calculate the processes of Lonn. The suggestion/motivation for doing so would have been to eliminate human error by allowing the computations to be done automatically and carried out via mechanical means.

Response to Arguments

9. The applicant's amendment filed on 01/27/2006 has been fully considered but has been determined ineffective to overcome the prior art rejections of claims 11-24 and 27-30 based upon 35 U.S.C. 103(a).

Regarding paragraph 3, the examiner agrees with the applicant that Kovacs fails to disclose the predetermination or calculation of a non-circular orbit. However, the rejection has been amended to account for Lonn who discloses the predetermination of a non-circular orbit based on a plurality of detected proximity points determined by moving a detector toward a patient to positions where proximity points are sensed by a sensor

element. The combination of Kovacs, Ohike, and Lonn is sufficient to form the basis of a 35 U.S.C. 103(a) rejection.

Regarding paragraph 4, the examiner agrees with the applicant that Ohike does not disclose the predetermination or calculation of a non-circular orbit by moving first and second detectors toward a patient to positions where proximity points are sensed by sensor elements, and then determining an orbital path using the detected positions. However, the rejection has been amended to account for Lonn who discloses the predetermination or calculation of a non-circular orbit by moving a detector toward a patient to positions where proximity points are sensed by a sensor element, and then determining an orbital path using the detected positions. The combination of Kovacs, Ohike, and Lonn is sufficient to form the basis of a 35 U.S.C. 103(a) rejection.

Regarding paragraphs 5-8 of the applicant's remarks, the examiner agrees with the applicant's remarks that Stephan does not disclose storing proximity positions of the detectors in order to determine or calculate an orbital path to be used by the apparatus in moving the detectors about the patient to acquire data. Storing the proximity points for orbital calculation has not been disclosed by the prior art cited or otherwise and hence claims that specify the storage of the proximity points have been allowed. However, the examiner respectfully disagrees with the applicant on the matters of claims 11-24 and 27-30. The combination of all of Kovacs, Ohike, Lonn, and Stephan or combinations in part are sufficient to form the basis of 35 U.S.C. 103(a) rejections for the claims of 11-24 and 27-30.

Allowable Subject Matter

11. Claims 1-10,25, and 26 are allowed.
12. The following is an examiner's statement of reasons for allowance:

Regarding claims 1-10, none of the prior art of record discloses or makes obvious a non-circular orbit detection method of storing a first sensing position, storing a second sensing position, and then calculating a non-circular orbit about a patient using said stored first and second sensing positions. References such as Lonn discloses (figures 1 and 2, column 4 lines 32-60, column 6 lines 60-67, column 7 lines 1-67, column 8 lines 1-67, column 9 lines 1-63) a method for orbit calculation comprising calculating an orbital path of a detector around a patient based upon the position adjacent to the patient and using a calculated orbital path to move a detector about a patient to obtain image data of the patient. However, the instant application discloses storing the sensing positions so that a non-circular orbit may be calculated from the sensed positions rather than real-time position data.

Regarding claims 25 and 26, none of the prior art of record discloses or makes obvious a non-circular orbit calculator comprising means for storing positions of first and second detector elements when the sensors respectively detect first and second points of a patient and means for calculating a non-circular orbit about the patient based on the stored positions of the first and second detector elements. References such as Lonn discloses (figures 1 and 2, column 4 lines 32-60, column 6 lines 60-67, column 7 lines 1-67, column 8 lines 1-67, column 9 lines 1-63) a method for orbit calculation comprising calculating an orbital path of a detector around a patient based upon the position adjacent

to the patient and using a calculated orbital path to move first and second detectors about a patient to obtain image data of the patient. However, the instant application contains means for storing the sensing positions and calculating the non-circular orbit based on the stored positions rather than real-time position data.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

13. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure:

- a. US Patent #6,288,397 B1 – Maor discloses a V-shaped detector assembly.
- b. US Patent #6,204,503 B1 – Pierfitte discloses a dual detector system that computes patient detector distances and determines an orbit based on the results.
- c. US Patent #6,147,353 A – Gagnon discloses a multiple collimator detector apparatus whose heads move independently of one another

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

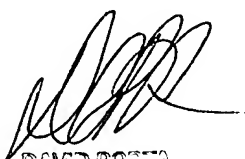
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Baker whose telephone number is 571-272-6003. The examiner can normally be reached on MTWRF 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David S Baker
Examiner
Art Unit 2878

DSB



DAVID PORTA
SUPERVISOR, ART UNIT 2878
TECHNOLOGY CENTER

Serial No. 10/608,704

January 27, 2006

Page 7

IN THE DRAWINGS:

Please substitute the attached Substitute Drawing Sheet for Figs. 7(A)-7(C).

OK to Add
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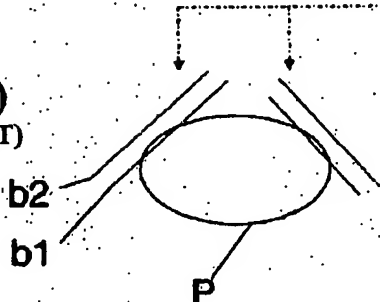
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Replacement Sheet 1 of 1
Serial No. 10/608,704

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FIG. 7(A)
(PRIOR ART)



Moving
Mechanism

Controller

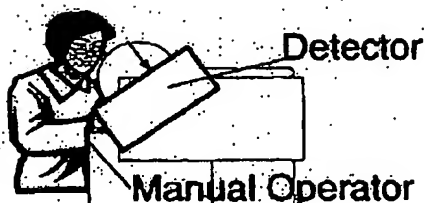
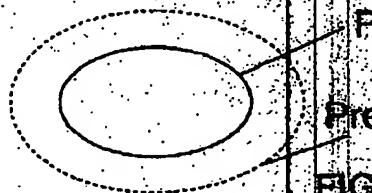


FIG. 7(B)
(PRIOR ART)



Pre-scan

FIG. 7(C)
(PRIOR ART)

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